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Renal transplantation in Northern Ireland 1968 – 1990

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INTRODUCTION

The first renal transplant was performed in Northern Ireland in 1968. From 1968 – 1990 a total of 618 transplants were carried out on 535 patients at the Renal Unit, Belfast City Hospital. This report analyses various factors affecting recipient and donor, to determine how these factors have changed during the past 22 years and to ascertain their effect on graft survival.

MATERIALS AND METHODS

From 1968 – 1990 a total of 618 transplants were performed at the Renal Unit, Belfast City Hospital. Of these 568 were cadaveric and 50 were live related transplants. There were 491 first, 67 second and 10 third cadaveric transplants. The figures for live transplants were 44 first, 5 second and one fourth transplant. The details of all transplants are held on a computerized data base in this laboratory. Actuarial graft survivals are calculated from the data base using the Log Rank survival programme[1] which is used in a version suitable for personal computers.[2] Death with a functioning graft was taken as graft failure, which is the usual practice in most centres in analysing graft survival.

RESULTS

Fig 1 shows the source of the cadaveric kidneys (local or imported from another centre) used for Belfast recipients in each year. The number of cadaveric donors obtained from within Northern Ireland between 1972 – 90 is given in Fig 2. The number of donors per million population was 21·8 in 1987 and 16·0 in 1990. Kidneys from a local donor need not necessarily be used for a local recipient, but reliable records of local donors whose kidneys were not used locally are only available from 1972. The number of cadaveric donors received from each of the local hospitals for each of the years 1982 – 1990 is shown in the Table.

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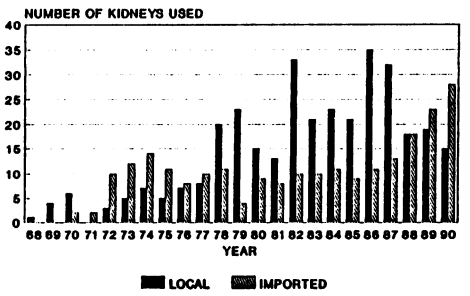

Fig 1. Source of cadaveric kidney used for Belfast recipient.

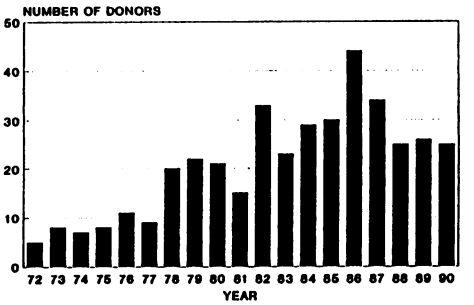

Fig 2. Local cadaveric donors obtained each year.

TABLE

Cadaveric donors from local hospitals 1982 – 90

	1982	*1983*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*Total*
Royal Victoria	19	14	15	18	29	26	17	17	15	170
Belfast City	2	1	1	2	3	2	6	2	3	22
Ulster	7	3	3	1	1	2	—	1	1	19
Altnagelvin	1	1	1	2	2	1	1	2	1	12
Mater	2	3	3	1	3	—	—	—	1	13
Craigavon	1	—	1	3	3	—	1	—	2	11
Tyrone County	1	—	4	1	—	—	—	—	1	7
Mid-Ulster	—	—	—	1	2	2	—	—	—	5
Coleraine	—	1	—	—	—	1	—	1	—	3
Erne	—	—	—	—	—	—	—	3	—	3
South Tyrone	—	—	—	—	—	—	—	—	1	1
Waveney	—	—	—	—	1	—	—	—	—	1
Downe	—	—	—	1	—	—	—	—	—	1
Ards	—	—	1	—	—	—	—	—	—	1
Total	33	23	29	30	44	34	25	26	25	269

A comparison of the age of cadaveric donors, irrespective of their source, transplanted to local recipients during different time periods is given in Fig 3a. A breakdown of the age of recipients transplanted within the same time periods is also shown (Fig 3b).

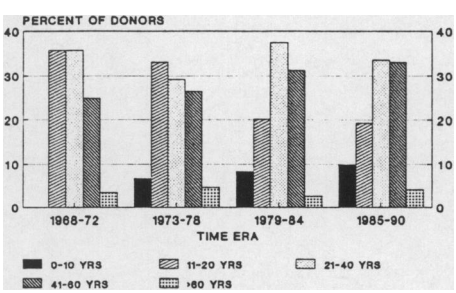

Fig 3a. Age of donor used for Belfast recipient 1968 – 1990.

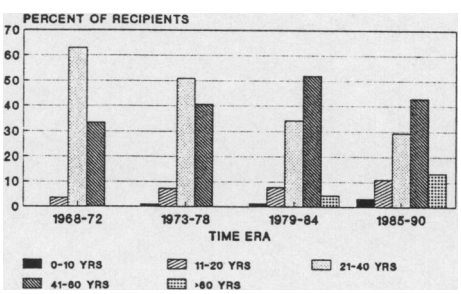

Fig 3b. Age of recipient transplanted 1968 – 1990.

The graft survival obtained with donors of different age groups and recipients of different age groups is shown in Fig 4. The oldest donor was aged 70 and the youngest was one year old. Whereas 65% of kidneys used from donors aged 21–40 were retrieved from local donors, 65% of kidneys from donors older than 60 were imported. A similar percentage of local and imported kidneys came from donors aged 1–10, 11–20 and 41–60. The oldest recipient was aged 71 and the youngest aged 2 years.

There was no difference in actuarial graft survival or patient survival for first cadaveric compared to retransplant second or third cadaveric transplants (Fig 5).

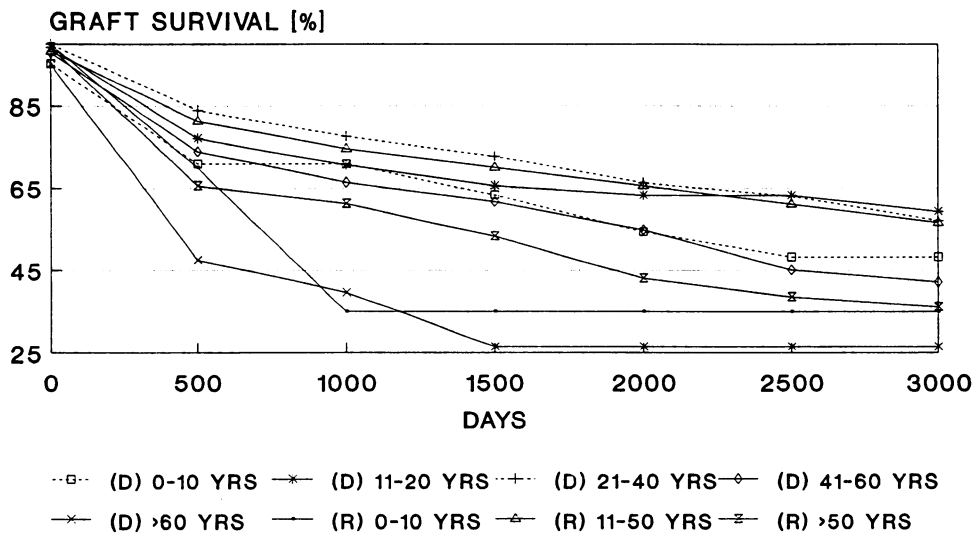

Fig 4. Age of donor (D) or age of recipient (R) and graft survival first cadaver.

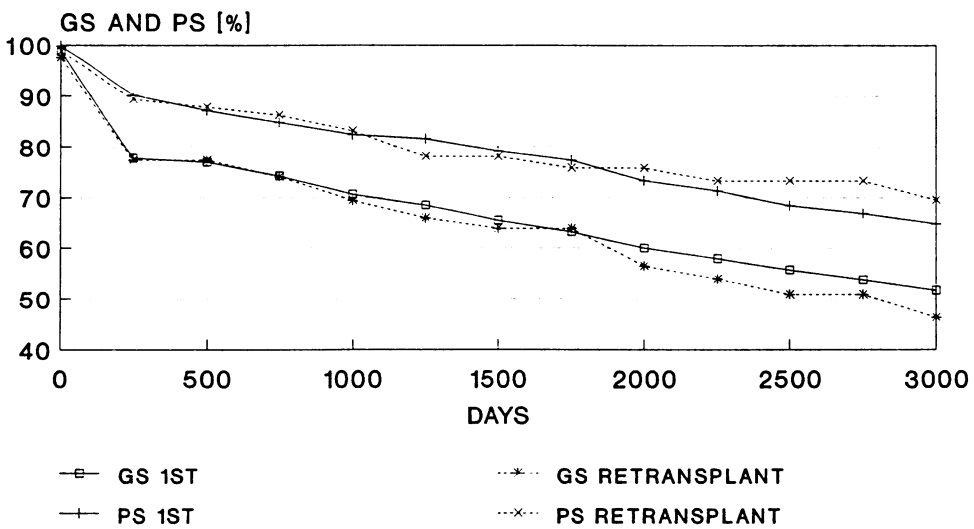

Fig 5. Actuarial graft (GS) and patient (PS) survival in 1st and retransplant cadaver transplants.

Of the 568 cadaveric donor kidneys 334 were local and 234 were imported. No difference was found in graft survival for first cadaveric transplants, whether the donor kidney was local or imported. Of the 568 cadaveric transplants, 345 were to males and 223 were to females. There was no difference in graft survival in first cadaveric transplants between males and females.

DISCUSSION

The number of local cadaveric donors increased from the commencement of renal transplantation in Belfast to a peak in 1986, whereas the number of imported kidneys received was relatively constant. Since 1987 the number of local donors has declined but the number of imported kidneys has increased. The reason for the latter increase is the adoption by more than 90% of transplant units in the United Kingdom of a scheme whereby if one kidney is beneficially matched (not more than one HLA – A or B antigen mismatched) to a recipient in another centre, it must be offered to that centre.

It is difficult to find a reason why the number of local kidneys procured has decreased since 1986. Analysis of the local hospitals supplying the donors shows the reliance placed on the Royal Victoria Hospital. There is a noticeable fluctuation in the number of donors obtained from most hospitals in each year, which may reflect staff movement. If all the local hospitals were able to offer each year the maximum number of donors they obtained in any one year, a total of 64 donors per annum would be obtained. This would easily fulfil the annual requirements for kidneys for local patients as the number of patients on the waiting list appears to have stabilised at 70 per annum. However, the maximum number of local donors ever achieved was 44 in 1986, (28·2 per million population).

The decrease in the number of donors has resulted in the number of donors per million population in Northern Ireland being below the national average in 1990, whereas in 1987 Northern Ireland was ranked second. During the same period the number of donors in the Republic of Ireland has increased from 11·9 per million in 1987 to 22·5 per million in 1990. This increase has coincided with the appointment of a Transplant Co-ordinator. The appointment of a similar Transplant Co-ordinator in Northern Ireland is imminent.

The age of donors used has changed during the time period under study. In the period 1968 – 72 no donor aged 10 years or less was used, whereas 10% of donors used between 1985 and 1990 were of that age. This reflects the larger number of children now transplanted at this unit. The percentage of donors aged 41 – 60 has gradually increased during the 22 year period with a corresponding reduction in the percentage of 11 – 20 year old donors. The graft survival in recipients receiving kidneys from donors aged 41 – 60 is comparable to the graft survival in recipients receiving kidneys from younger donors, and the use of these donors should be encouraged. Only recipients receiving kidneys from donors aged over 60 years have a poor graft survival. These kidneys were allocated on the basis of matching, and no evidence was found that they were given to recipients at greater risk. A higher percentage of kidneys from donors aged over 60 are imported and it may in future be more appropriate to refuse these donors unless they are a good match to the recipient.

The percentage of patients transplanted aged 21 – 40 has reduced during the time period analysed, with an increased percentage of recipients being

transplanted in the other age groups. Graft survival of patients aged over 50, or under 11, is not as good as patients aged 11 – 50. The latter age grouping was used as no difference in graft survival due to age was found within that group. The complications involved in transplanting young children (size of graft, post-operative management) would explain the poorer graft survival of that group. If a recipient dies with a functioning graft it is taken as graft failure which would explain the poorer graft survival in the older patients. Nevertheless it is still both feasible and reasonable to treat older patients by transplantation. The method of analysis used in this study is more stringent than that used in some studies which consider death with a functioning graft as lost to follow-up.

Overall there is a very good graft and patient survival obtained at this unit. Even when patients are re-transplanted good graft survival is obtained. Thus the only barrier to transplantation is lack of donors. We would hope that this study would encourage our colleagues to continue to offer donors to this unit. Of course much remains to be done in educating the public. A recent survey showed a 30% rate of refusal by relatives.[3]

The work reported here is the result of a team effort. The success of transplantation at Belfast City Hospital is due to the combined efforts of medical, surgical, nursing and laboratory staff. We therefore gratefully acknowledge the work of all staff, both past and present of the Renal Unit, Belfast City Hospital. We thank all colleagues who have contributed to the offer of donors during this period.

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